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to precede the former, and we believe greater care in its technical execution would have been desirable. As the map is intended to explain the meaning of hill-shading, the view of the hills and the map ought to be clear, and it ought to be possible to compare them down to minute details. The fourth plate explains the system of meridians and parallels and the curvature of the earth's surface. The rest of the maps are well selected, and do not call for any special comment. The maps of the British Isles are very good. We think, however, that a hypsometric map like No. 11 is of no great value for educational purposes, as contour-lines, unaided by hill-shading, do not convey to the child a good idea of the physical features of a country. Considered as a whole, the atlas must be commended as a great improvement upon the ordinary school atlas.

NOTES AND NEWS.

THE United States Fish Commission is undertaking an extensive series of explorations of the fish fauna of the rivers of the Alleghany region. The work is in charge of Prof. D. S. Jordan, assisted by Prof. P. P. Jenkins, Prof. B. W. Evermann, and Mr. Barton A. Bean. The basins of the James, Kanawha, Roanoke, Holston, French Broad, Yadkin, and Catawba will be included in the work of the present summer. Similar explorations of the smaller lakes of Michigan are under direction of Mr. Charles H. Bollman.

— The fourth article in the Railway Series now appearing in *Scribner's Magazine* will be contributed to the September number by Gen. Horace Porter, who writes of 'Railway Passenger Travel.' — 'The Record of a Human Soul' is the title of an anonymous little book to be published shortly by Longmans, Green, & Co. It is the honest account of the struggle of a sceptic, who ardently but unavailingly desired to believe, from the coming of the doubt until the hour when the doubter at last sees a light in heaven. It is introspective and subtle, but not morbid; its language is simple and direct; and the record is likely to be useful to not a few who have only the honest doubt in which there may be more faith than in half the creeds.

— The Canadian Institute, Toronto, Ont., is desirous of collecting, and incorporating in its Proceedings, reliable data respecting the political and social institutions, the customs, ceremonies, beliefs, pursuits, modes of living, habit, exchange, and the devolution of property and office, which obtain among the Indian peoples of the Dominion. It feels that this department of research has not been so fully cultivated in Canada as its importance demands, fears that the opportunity of gathering and carefully testing the necessary facts may with the advancing tide of European civilization soon pass away, and is of opinion that much light may be cast upon the genesis and growth of government as well as upon legal, sociological, and economic thought by an accurate study of the Indian tribes in their existing conditions and organizations. Contributions to the philology of the Indian tongues, and additions to their folk or myth lore, will be welcomed as heretofore. At the same time the institute begs leave, without desiring to contract the field of observation, to direct attention to the sociological matters.

— A new process for protecting iron against corrosion, now employed by a company at Port Chester, N.Y., is said to give satisfactory results. The company is now manufacturing sanitary soil-pipes treated by this method, which is described by Mr. H. Haupt as follows: "After the pipes have been lowered into the retorts by means of a traveller, the retorts are closed for about fifteen minutes until the contents are heated to the proper temperature. Steam from a boiler at sixty pounds pressure is then introduced into the superheater, which it traverses, and from which it escapes at the temperature of the iron, upon which it acts for about one hour. A measured quantity of some hydrocarbon is then admitted with a jet of steam, followed again by a fixing bath of superheated steam, which completes the process." Professor Gesner, the director of the works, says there is no pressure in the retort, and that there are no free explosive gases. The water-seals attached to the retorts show only slight oscillations, but not an inch of pressure; and when the covers are removed and air admitted there is no explosion, as there always is when free hydrogen or carbonic oxide is present. The absence

of pressure and of explosive gases is a proof that all the operations have been so nicely regulated as regards material used, quantity, and time of application, that a perfect absorption and union of the carbon, oxygen, and hydrogen with the iron has been effected. The protection thus afforded to the iron is not a mere coating, like paint, but is said to be an actual conversion, to a greater or less depth, into a new material. When properly treated, this material does not seem to be detachable by pounding, bending, hammering, rolling, or heating. The pipes treated at Port Chester have been immersed in baths of dilute sulphuric acid and exposed to the salt air for weeks without change, while untreated pipes were quickly covered with red oxide, or with sulphate of iron.

LETTERS TO THE EDITOR.

Re-appearance of Song-Birds.

THE appearance of birds is always quite irregular, so far as numbers are concerned, with the possible exception of one or two varieties like the migratory thrush. We will find in any locality that the oriole is very plentiful for a few years, and then comparatively scarce for a few years. This cannot be mistaken by those on whose gardens he makes his inroads. The absence of gross-beaks and then their great abundance is equally marked. So of nearly all familiar birds. The cause is probably that they range over a large territory, and select different nesting-centres. It is well known that pigeons will cover the sky for two or three springs, moving to a camp in the farther north, and then for years not a pigeon be seen. I believe my catbirds alone have so taken to me that I can always count on their familiar forms and delicious notes.

The extraordinary abundance of song-birds is no doubt a simple coincidence or accidental agreement of action on the part of several species. In my own grounds I do not see any such unusual migration; for the reason, probably, that I have for many years so protected and fed them, that it is a paradise for birds. Yet it is true that several sorts of birds are on the increase here; owing, possibly, to finding their quarters disturbed elsewhere. The line of migration can be much more easily swerved than the ponderous and slow movements of animals. I think you may be sure that the abundance in some quarters is balanced by the deficit in other quarters. New influences constantly arise, affecting the peace and content of birds. I have all summer been fighting a band of pseudo-scientists; that is, boys who carry papers permitting them to shoot our birds to make collections for so-called scientific purposes. Before the law to protect our song-birds, no decent young man would prowl about near our residences to shoot the pets. But now they are 'scientists;' and we have no rights to be considered. They crack their guns under our very noses. But I have vowed to have a lawsuit with every budding Audubon that comes this way, and am at present ahead.

Now, here is a law that works not at the muzzle, but the butt. Its effect is to scatter our birds in their favorite haunts. My grounds cover nine acres only, but several neighbors are in full accord; and there are full fifty acres of flowers, hedges, and fruit where the song-birds are wonderfully abundant. But how long would they remain with us if one after another fell victims the moment they flew outside our lines? Another year we should lament the absence of our birds, and somewhere else people would rejoice in their superabundance.

E. P. POWELL.

Clinton, N.Y., Aug. 7.

The Physical Aspect of the Planet Mars.

THERE has been so much said of late, in the newspapers and elsewhere, in regard to the parallel canals of Mars, that perhaps a brief discussion of the facts observed in regard to them may be of interest. And first of all it may be remarked, that, of all the different methods of accounting for the appearances observed, perhaps the least probable is that they are water-canals.

Let us see what are the facts in the case. According to the observations of Schiaparelli (*Reale Accademia dei Lincei* 1881 and 1886) they lie almost entirely between 50° north and south latitude (that is, in the torrid and warmer portions of the temperate zones), and extend across the continent from the northern to the southern